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Adoption Behavior of Paddy Farmers on Soil Health Card Recommendations

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ABSTRACT

The study was conducted in Madurai district of Tamil Nadu to assess the adoption behavior of paddy farmers on Soil Health Card (SHC) based recommendations. A total of 120 paddy farmers who were the beneficiaries of SHC scheme were contacted to collect the data. A pre tested interview schedule was used to collect the data. The results revealed that overall adoption on SHC recommendations found to be medium (45.50%). With regard to straight fertilizers application before the introduction of SHC 40.80 percent of the respondents had applied excess NPK fertilizers. After the introduction, the excess range has been reduced up to 5.8 per cent and in the same way the deficient application was also rectified by 4.7 per cent of the farmers. With regard to complex fertilizers 12.8 per cent of the respondents had followed the exact recommendation of complex fertilizers. The adoption behavior of micronutrients showed that 29.50 per cent of respondents followed recommended dose of micronutrients after SHC scheme. About 6.00 per cent respondents had started to follow the correct dose of Bio fertilizers after the introduction of SHC. Overall adoption level of the farmers was up to medium level and hence emphasis is needed to inspire the farmers to adopt soil testing practices and soil fertility management.

Keywords: *Paddy farmers; Adoption; Soil Health Card scheme; Tamil Nadu.*

INTRODUCTION

In India, agricultural sector still occupies a predominant position in the country's economy, accounting for about 13.9 per cent of Gross Domestic Product and one-fifth of foreign exchange. With the success of green, white and blue revolutions, India is now self-reliant in food grains production. By 2025, about 118 million tonnes additional food grains need to be produced per year. But, the demographic projections indicated that the per capita land availability will shirk from 0.14 ha to 0.10 ha in the year 2025. The best option is to improve the productivity per unit area per unit time. This will lead to use the high intensive crops and extensive use of fertilizers which can led to consequences like deterioration of soil structure, wastage of nutrients, destruction of soil microorganisms and scorching of plants at the extreme cases. Therefore it needs to be managed judiciously to restore its capacity to feed our population sustainably in the long run. To maintain the soil healthy, it is very essential to assess the quantity of nutrients present in it and applying

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only those nutrients which were present in less quantity in the soil.

To achieve the above objective, Government of India introduced a scheme of Soil Health Card on 19 February, 2015. A Soil Health Card (SHC) is a printed card given to farmers that contains the status of various plant nutrients available in soil as well as the dosage of different fertilizers for the major crops grown in farmland based on the soil test results. The Soil health card presently depicts the status of 12 essential parameters like pH, EC, Organic carbon, available nitrogen (N), Phosphorus (p), Potassium (K), Sulphur (S), Iron (Fe), Manganese (Mn), Zinc (Zn), Copper (Cu) and Boron(B). Realizing the importance of Soil Health Card as a tool for efficient nutrient management the present study was conducted to identify the adoption behavior of paddy farmers towards Soil Health Card recommendations.

METHODOLOGY

The study was conducted in Madurai district of Tamil Nadu which has larger population of rice growing farmers and maximum number of farmers who are in receipt of Soil Health Cards. Madurai east and Madurai west block were purposively selected based on maximum area under paddy cultivation and receipt of more number of Soil Health Cards. In the selected blocks, six villages were selected based on the maximum area under paddy cultivation and number of Soil Health Card received viz., Malaipatti, Thodaneri, Kulamangalam, Vayalur, Boothakudi, Machampatti. Primary data from the farmers were collected with the help of a pre tested interview schedule through personal interviews. A total of 120 rice-growing farmers were randomly interviewed at the rate of 60 farmers per block. The results were analyzed using percentage analysis.

FINDINGS AND DISCUSSION

The data presented in Table 1 reveal that majority of the farmers (45.50%) had medium level of adoption followed by low (32.20 %) and high level (22.30 %) adoption.

Table 1.
Adoption Behaviour of Farmers towards Soil Health Card

(n=120)

Sl. No	Particulars	Number	Percentage
1.	Low	40	32.20
2.	Medium	55	45.50
3.	High	25	22.30
	Total	120	100.00

Overall, low to medium level of adoption was seen with majority (77.70%) of the respondents. The farmers felt that the SHC is very useful to know the nutrients recommendations and the quantity to be applied in order to maintain the soil fertility. Even though they know the recommended dose of fertilizers, they are not properly adopting the correct doses. The reason behind the this might be due to their unawareness about the benefits of optimum fertilizer use to improve their net income as well as ill effects of excess fertilizer application to the environment. The results are in agreement with Chowdary & Theodore (2016).

Table 2.
Distribution of Respondents According to Application of Straight Fertilizers

(n=120)

Sl. No	Macro nutrients	Exact application			Excess application			Deficient application		
		Before	After	% difference	Before	After	% difference	Before	After	% difference
1.	N	28 (23%)	41 (34.1%)	13 (11.1%)	50 (41.6%)	43 (35.8%)	7 (5.8%)	42 (35.0%)	36 (30%)	6 (5%)
2.	P	27 (22.5%)	38 (31.6%)	11 (9.1%)	54 (45%)	47 (39.1%)	7 (5.9%)	39 (32.5%)	35 (29.1%)	4 (3.4%)
3.	K	30 (25.0%)	44 (36.6%)	14 (11.6%)	43 (35.8%)	36 (30.0%)	7 (5.8%)	47 (39.1%)	40 (33.3%)	7 (5.8%)
Average NPK users		23.5%	34.0%	10.6%	40.8 %	34.9%	5.8%	35.5%	30.8%	4.7%

With regard to straight fertilizers application before the introduction of SHC, 40.80 percent of the respondents had applied excess NPK fertilizers. But after the introduction, the excess range has been reduced up to 5.8 per cent and in the same way the deficient application also rectified by 4.7 per cent of the farmers after the SHC. From this result it is evident that there is consistent increase in exact fertilizer application after the use of SHC which is a positive sign of progress towards efficient nutrient management, whereby farmer can reduce the cost of cultivation and increase their net returns. Further, many of the farmers used their own dosages because they felt that the SHC recommendations are not suitable to their field conditions.

From Table 3 it is found that 40.50 per cent of the respondents had adopted excess application of complex fertilizers before SHC and it has been reduced by 6.60 per cent of the respondents after SHC. The deficient application of complex fertilizers is adopted by 34.70 of the respondents before the SHC and 28.50 per cent of the respondents have been adopting the deficient quantity of recommendations after SHC. Hence a total of 12.8 per cent of the respondents had shown increasing trend in the adoption of exact recommendations of complex fertilizers application. SHC helps the farmers to know about the condition of land and get crop specific prescription for the amount of manure and fertilizers. They started realizing the usefulness and trusting the soil testing

Table 3.
Distribution of Respondents According to Application of Complex Fertilizers

(n=120)

Sl. No	Macro nutrients	Exact application			Excess application			Deficient application		
		Before	After	% difference	Before	After	% difference	Before	After	% difference
1.	DAP	26 (21.6%)	41 (34.1%)	15 (12.5%)	52 (43.3%)	45 (37.5%)	7 (5.8%)	42 (35%)	34 (28.3%)	8 (6.7%)
2.	Ammonium Phosphate	29 (24.1%)	45 (37.5%)	16 (13.4%)	49 (40.8%)	40 (33.3%)	9 (7.5%)	42 (35%)	35 (29.1%)	7 (5.9%)
3.	Potassium chloride	34 (28.3%)	49 (40.8%)	15 (12.5%)	45 (37.5%)	37 (30.8%)	8 (6.7%)	41 (34.1%)	34 (28.3%)	7 (5.8%)
Average complex fertilizers users		24.6%	37.4%	12.8%	40.5%	33.8%	6.6%	34.7%	28.5%	6.1%

and recommendations. This might be the reason for increasing trend in exact quantity of fertilizers application.

Majority of the farmers had neglected the adoption of micronutrients in their field due to lack of awareness and knowledge.

Table 4.
Distribution of Respondents According to Application of Micronutrients

(n=120)

Sl. No	Macro nutrients	Exact application			Excess application			Deficient application		
		Before	After	% difference	Before	After	% difference	Before	After	% difference
1.	Boron	26 (21.6%)	41 (34.1%)	15 (12.5%)	52 (43.3%)	45 (37.5%)	7 (5.8%)	42 (35%)	34 (28.3%)	8 (6.7%)
2.	Manga-nese	29 (24.1%)	45 (37.5%)	16 (13.4%)	49 (40.8%)	40 (33.3%)	9 (7.5%)	42 (35%)	35 (29.1%)	7 (5.9%)
3.	Iron	34 (28.3%)	49 (40.8%)	15 (12.5%)	45 (37.5%)	37 (30.8%)	8 (6.7%)	41 (34.1%)	34 (28.3%)	7 (5.8%)
4.	Zinc	34 (28.3%)	49 (40.8%)	15 (12.5%)	45 (37.5%)	37 (30.8%)	8 (6.7%)	41 (34.1%)	34 (28.3%)	7 (5.8%)
Average micronutrients users		24.6%	37.4%	12.8%	40.5%	33.8%	6.6%	34.7%	28.5%	6.1%

But the overall micronutrient application showed that, there is a slight increase in the usage after the SHC recommendations. As regards excess application even after the SHC recommendations 2.3 per cent of farmers applied excess amount of micronutrients. Because they felt that excess application of micronutrients will significantly influence the productivity of crops. In case of deficient application, farmers adopted less quantity than the recommended level even after the SHC recommendations. They perceived that the smaller quantity of micronutrients than the recommended level is sufficient to attain the crop yield. Since micronutrient is not considered as much important as like of macronutrient due to lack of knowledge and awareness, it is mostly neglected by farming community but the scenario is not quite the same after the introduction of SHC Scheme.

As regards application of organic manure, it was found that none of the farmers had applied exact quantities of organic manure due to availability issues.

Table 5 shows that (27.50%) of the respondents had adopted exact quantity of bio fertilizers after SHC, 37.50 per cent of the respondents had adopted excess quantity and 30.80 per cent of the respondents were adopting deficient quantity. From the above furnished information, it is concluded that complete adoption of SHC is quite low because many of the farmers were unaware of SHC and some of them got SHC recently. Farmers who applied deficient quantity of fertilizers reported that additional fertilizer cost was a burden and hence they have not adopted completely.

Table 5.
Distribution of Respondents according to application of Bio-Fertilizers

(n=120)

Sl. No	Bio fertilizers	Exact application			Excess application			Deficient application		
		Before	After	% difference	Before	After	% difference	Before	After	% difference
1.	Azospirillium	26 (21.6%)	33 (27.5%)	7 (5.9%)	56 (46.6%)	45 (37.5%)	11 (9.1)	40 (33.3%)	37 (30.8%)	3 (2.5%)

CONCLUSION

It could be concluded from this study that majority of the farmers had low to medium level of adoption as regards soil health card recommendations. Therefore much emphasis is needed to inspire the farmers to adopt soil testing practices and soil fertility management

for sustainable crop production. The State department of Agriculture and KVK (Krishi Vigyan Kendra) should initiate efforts for fostering the adoption of Soil Heath Card. It would result in assured national food security, nutritional security, maintenance of soil health & enhancement of soil fertility.

REFERENCE

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